How to configure an H.323 IP trunk between an Avaya™ IP600 Internet Protocol Communication Server and Avaya™ IP Office Server - Issue 1.2

Abstract

Existing Avaya Call Processing (ACP) platform customers may choose to use the new IP Office server to meet data and telephony needs at smaller remote sites. One way of achieving this integration is via H.323 IP trunks. These Application Notes describe the system configuration parameters required for H.323 IP trunk interoperability between an Avaya™ IP Office server and either a Avaya DEFINITY® Server, IP600 Server or a MultiVantage™ Software platform.

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1. Introduction

Avaya Call Processing (ACP) based platforms such as the Avaya™ IP600 Server and Avaya DEFINITY® Business Communication Server have a large installed base. Some of these ACP platform customers may choose to interconnect to an IP Office server via an IP trunk. This document describes the basic administration tasks necessary to interconnect these systems together via an H.323 IP trunk. A sample configuration with provisioning tasks has been provided in this document for use as a reference.

2. Configuration

The sample configuration, depicted in Figure 1, illustrates an Avaya™ IP600 Server and Avaya™ IP Office server operating in different subnets, connected via an H.323 trunk. Extension 30029 is registered with the IP600 server, while extensions 20001 through 20004 belong to the IP Office server. All Avaya™ IP telephones have been provisioned statically in this example.

Note: IP Office servers (controllers) are equipped with an onboard DHCP server and a TFTP server (located on the Manager PC) that can optionally be used for IP telephone DHCP address assignment and firmware upgrade.

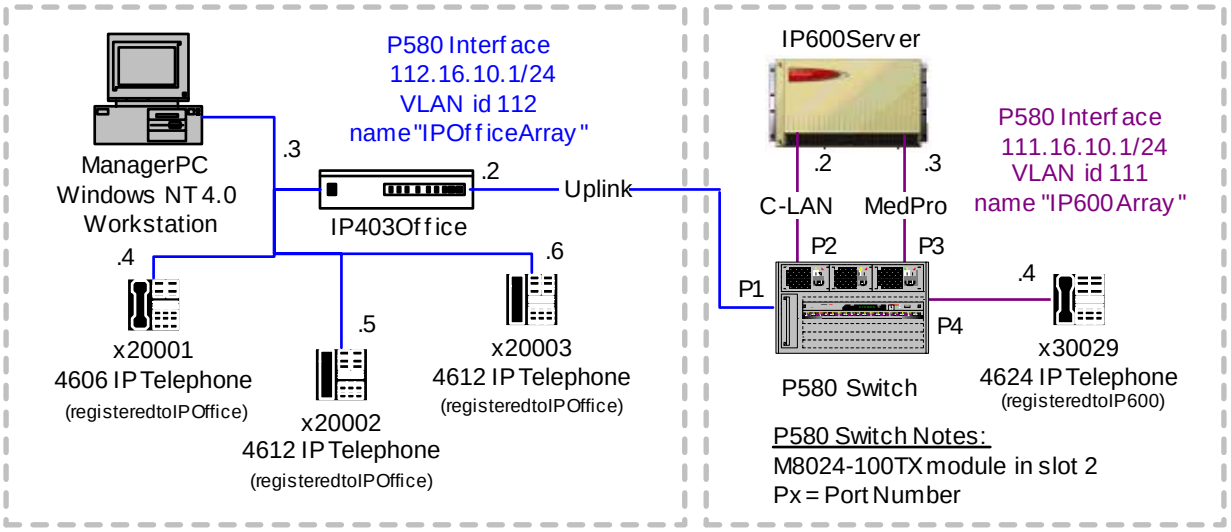

Figure 1: Sample H.323 Trunk Configuration

3. Hardware and Software Used

The following hardware and software versions were used for this configuration:

- Avaya™ IP600 Internet Protocol Communication Server release R009c.05.0.122.2
- Avaya Cajun® P580 Switch version 5.2.10
- Avaya™ IP403 Office Server build 1.1(19)
- Avaya™ IP Telephone firmware version 1.1 (registered with the IP Office server)
- Avaya™ IP Telephone firmware version 1.6 (registered with the IP600 Server)
- Manager PC - 750MHz, 20GB HD, 512MB RAM, Microsoft NT 4.0 Workstation

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4. IP600 Server Configuration via a Terminal Emulator

These notes assume that all customer and feature options have already been provisioned to support IP trunks, shuffling and hairpinning on the Avaya™ IP600 Server. Please refer to the Administration for Network Connectivity Guide for additional details.

4.1. Basic H.323 Trunk Administration Tasks

1. Define IP Network Region for optimal audio packet performance.

   At the terminal command prompt, enter **`change ip-network-region 1`** and match the parameters in Figure 2. Then apply the changes.

   Important Notes: Administrators may need to use a different network region number depending on the configuration being used. Be sure that both servers are configured as follows in order to allow Avaya™ IP Telephones registered on each system the ability to establish media paths directly.

   IP600 Server ip-network-region, station and signaling-group:
   Direct IP-IP Audio Connections = y
   IP Audio Hairpinning = y

   IP Office server IP trunk and station level:
   Allow Direct Media Path = Enabled

```
change ip-network-region 1                                    Page   1 of   2

                          IP Network Region

                 Region: 1
                   Name:
       Audio Parameters
              Codec Set: 1

         UDP Port Range
                    Min: 2048
                    Max: 65535

     DiffServ PHB Value: 0             Direct IP-IP Audio Connections? y
                                                 IP Audio Hairpinning? y
       802.1p/Q Enabled? n
```

Figure 2: Configuring the IP Network Region

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2. Specify the type of codec used for voice encoding and companding.

   At the terminal command prompt, enter **`change ip-codec-set 1`** and match the parameters in Figure 3. Then apply the changes.

   Note: Administrators may need to use a different codec-set number for a particular configuration if 1 is already being used. If this is the case the Administrator must be sure to match the codec-set value with the network region being used. All of the mutually supported codecs supported between the Avaya™ IP Office server and IP600 Server are shown in Table 1 along with their respective nomenclature. The ordering and availability of these codecs can be customized to fit a particular application. It is important to keep in mind the bandwidth used by each codec and the bandwidth available between locations. If the bandwidth were limited, it would be best to specify only a low bandwidth codec in the codec set, for example G.729.

IP600 Server	IP Office Server
G.711MU	G.711 ULAW 64K
G.711A	G.711 ALAW 64K
G.729	G.729(a) 8K CS-ACELP
G.723-6.3K	G.723.1 6K3 MP-MLQ

Table 1: Mutually Supported Speech Codecs

```
change ip-codec-set 1

                         IP Codec Set

    Codec Set: 1

    Audio      Silence      Frames   Packet
    Codec      Suppression  Per Pkt  Size(ms)
 1: G.711MU         n         2        20
 2: G.711A          n         2        20
 3: G.729           n         2        20
 4: G.723-6.3K      n         1        30
```

Figure 3: Configuring the IP Codec Set

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3. Assign node names and IP addresses to each node in the network.

   At the terminal command prompt, enter **`change node-names ip`** and match the parameters in Figure 4. Then apply the changes.

   Note: The C-LAN and MedPro cards must have unique names and IP addresses assigned in the node-names list. These values will eventually be matched to the physical card interfaces in step 4. Be sure to add the IP address for the IP Office server along with a unique name so that it can be provisioned in the signaling-group between the systems in section 4.2. The naming conventions used are open, but remember to carry the names throughout the remaining tasks.

```
change node-names ip                                          Page   1 of   1
                                  IP NODE NAMES
    Name              IP Address          Name              IP Address
clan                111.16 .10 .2                            .   .   .
medpro              111.16 .10 .3                            .   .   .
ipoffice            112.16 .10 .2                            .   .   .
default             0  .0  .0  .0                            .   .   .
                       .   .   .                             .   .   .
                       .   .   .                             .   .   .
```

Figure 4: Configuring IP Node Names

4. Define the IP interface for the C-LAN and MedPro cards being used for the trunk.

   At the terminal command prompt, enter **`change ip-interfaces`** and match the parameters in Figure 5. Then apply the changes.

   Note: Administrators may need to use a different Slot value depending on the particular configuration. The Node Names used for each card interface must match those specified in the Node Names table (step 3) in order to correctly correlate each IP address to its respective card.

```
change ip-interfaces                                          Page   1 of   6

                                  IP INTERFACES

Enable                                                                    Net
Eth Pt Type   Slot  Code Sfx Node Name       Subnet Mask     Gateway Address Rgn
   y   C-LAN  01A04 TN799  C clan            255.255.255.0   111.16 .10 .1   1
   y   MEDPRO 01A05 TN2302   medpro          255.255.255.0   111.16 .10 .1   1
   n                                         255.255.255.0     .   .   .
   n                                         255.255.255.0     .   .   .
```

Figure 5: Configuring IP Interfaces

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5. Assign Link via Ethernet Data Module to the C-LAN.

   At the terminal command prompt, enter **`add data-module next`** and match the parameters in Figure 6. Then apply the changes.

   Note: Administrators may need to use a different data-module and C-LAN slot depending on the particular configuration. If multiple C-LAN cards are in use the administrator may be required to change the link number. However, port 17 must be used on the C-LAN card regardless.

```
change data-module 31209                                        Page   1 of   1
                                 DATA MODULE

  Data Extension: 31209           Name: clan ip 1a04
            Type: ethernet
            Port: 01A0417
            Link: 1
```

Figure 6: Configuring the Date Module

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4.2. Detailed H.323 Trunk Administration Tasks

1. Create a signaling group for the H.323 trunk connecting to the IP Office server.

   At the terminal command prompt, enter **`add signaling-group 5`** and match the parameters in Figure 7. Then apply the changes.

   Note: You may need to use a different signaling-group depending on your setup. Since you have not created a trunk group so you must leave the Trunk Group for Channel Selection field blank. The Near-end Node Name and the Far-end Node Name must match the values from the Node Names table (section 4.1, step 3). Be sure to use port 1720 for the Near-end and Far-end. The Direct IP-IP Audio Connections and IP Audio Hairpinning fields must be enabled.

   Note: The field Calls Share IP Signaling Connection must be set based on the IP Office server release in use. For release 1.3(15) or earlier, this field must be set to "y". For release 1.3(16) or later it must be set to "n".

```
change signaling-group 5                                        Page   1 of   5
                                SIGNALING GROUP

 Group Number: 5              Group Type: h.323
                            Remote Office? n          Max number of NCA TSC: 0
                                                        Max number of CA TSC: 0
                                                    Trunk Group for NCA TSC:
       Trunk Group for Channel Selection: _
          Supplementary Service Protocol: a

        Near-end Node Name: clan             Far-end Node Name: ipoffice
     Near-end Listen Port: 1720           Far-end Listen Port: 1720
                                       Far-end Network Region:
              LRQ Required? n           Calls Share IP Signaling Connection? n
              RRQ Required? n
                                            Bypass If IP Threshold Exceeded? n
                                             Direct IP-IP Audio Connections? y
                                                       IP Audio Hairpinning? y
                                           Interworking Message: PROGress
```

Figure 7: Configuring the Signaling Group

2. Create a new trunk group for H.323 trunks.

   At the terminal command prompt, enter **`add trunk-group 5`** and match the parameters shown in Figures 8 through 10. Then apply the changes.

   Note: You may need to use a different trunk-group number depending on your setup. The parameters on ACP page 1 of 10 (see Figure 8) that need to be changed are:

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- Group Type
- TAC
- Carrier Medium
- Service Type
- Codeset to Send Display

```
display trunk-group 5                                          Page   1 of  10
                                TRUNK GROUP

Group Number: 5                     Group Type: isdn          CDR Reports: y
  Group Name: IP Trunk to IP Office       COR: 1        TN: 1        TAC: 105
   Direction: two-way        Outgoing Display? n         Carrier Medium: IP
 Dial Access? n                Busy Threshold: 99          Night Service:
Queue Length: 0
Service Type: tie                    Auth Code? n            TestCall ITC: unre
                        Far End Test Line No:
TestCall BCC: 0
TRUNK PARAMETERS
         Codeset to Send Display: 0     Codeset to Send National IEs: 6
        Max Message Size to Send: 260   Charge Advice: none
  Supplementary Service Protocol: a     Digit Handling (in/out): enbloc/enbloc

            Trunk Hunt: cyclical                    QSIG Value-Added? n
                                                   Digital Loss Group: 13
Calling Number - Delete:     Insert:                 Numbering Format:
              Bit Rate: 1200         Synchronization: async    Duplex: full
 Disconnect Supervision - In? y  Out? y
 Answer Supervision Timeout: 0
```

Figure 8: Configuring Trunk-Group ACP Page 1 of 10

Note: The parameters on ACP page 2 of 10 (see Figure 9) that need be changed are:

- Send Name
- Send Calling Number
- Send Connected Number

```
change trunk-group 5                                           Page   2 of  10
TRUNK FEATURES
          ACA Assignment? n            Measured: none      Wideband Support? n
                                 Internal Alert? n        Maintenance Tests? n
                               Data Restriction? n     NCA-TSC Trunk Member:
                                     Send Name: y      Send Calling Number: y
            Used for DCS? n
   Suppress # Outpulsing? n
 Outgoing Channel ID Encoding: preferred     UUI IE Treatment: service-provider

                                               Replace Restricted Numbers? n
                                              Replace Unavailable Numbers? n
                                                    Send Connected Number: y
               Send UCID? n
 Send Codeset 6/7 LAI IE? y


                            Network (Japan) Needs Connect Before Disconnect? n
```


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Figure 9: Configuring Trunk-Group ACP Page 2 or 10

Note: The number of trunk group members can vary. It is recommended that the number of trunk group members match the number of media channels available by the voice compression module (VCM) installed on the IP Office server at a minimum. It is possible for this number to be larger, but this is beyond the scope of these application notes. The parameters on ACP page 4 of 10 (see Figure 10) that need to be set are:

- Port
- Sig Grp.

```
display trunk-group 5                                        Page   4 of  10
                                TRUNK GROUP
                                     Administered Members (min/max):   1/7
GROUP MEMBER ASSIGNMENTS                 Total Administered Members:   7

       Port    Code Sfx Name        Night           Sig Grp
  1: ip                 trktoipo1                     5
  2: ip                 trktoipo2                     5
  3: ip                 trktoipo3                     5
  4: ip                 trktoipo4                     5
  5: ip                 trktoipo5                     5
```

Figure 10: Configuring Trunk-Group ACP Page 4 of 10

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3. Add a trunk group for channel selection to the signaling group.

   At the terminal command prompt, enter **`change signaling-group 5`** and match the parameters in Figure 11. Be sure to change the Trunk Group for Channel Selection to the number of your trunk group you chose in section 4.2, step 2 then apply the changes.

   Note: You may have to use a different trunk-group value depending on your setup. Only basic trunk connectivity has been provisioned at this point. You will still need to administer call routing in order to be able to place calls between the systems using the H.323 trunk. Older Avaya Call Processing (ACP) platforms may require you to **`busy signaling-group 5`** first and then **`change signaling-group 5`** and finally **`release signaling-group 5`** for this operation to complete.

```
change signaling-group 5                                        Page   1 of   5
                               SIGNALING GROUP

 Group Number: 5              Group Type: h.323
                            Remote Office? n          Max number of NCA TSC: 0
                                                        Max number of CA TSC: 0
                                                    Trunk Group for NCA TSC:
       Trunk Group for Channel Selection: 5
          Supplementary Service Protocol: a


        Near-end Node Name: clan             Far-end Node Name: ipoffice
      Near-end Listen Port: 1720           Far-end Listen Port: 1720
                                        Far-end Network Region:
              LRQ Required? n            Calls Share IP Signaling Connection? n
              RRQ Required? n
                                             Bypass If IP Threshold Exceeded? n
Direct IP-IP Audio Connections? y
                                                       IP Audio Hairpinning? y
                                          Interworking Message: PROGress
```

Figure 11: Linking the Signaling Group with a Trunk Group

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4.3. Administering Basic UDP Call Routing Tasks

This section represents one way in which 5-digit UDP dialing can be administered for interoperability with the IP Office. Some applications may require a different routing method. Please refer to the Administration Guide for further details.

1. Change UDP to route 20xxx numbers to the IP Office server.

   At the terminal command prompt, enter **change udp 2** and match the parameters shown in Figure 14. Then apply the changes.

   Note: The UDP entry created in Figure 12 tells ACP to use AARCode 200 when it receives a 5-digit dial string beginning with 20xxx. After ACP process this step, the 5-digit number will become a 7-digit number. For example, if the user dialed 20123, the digit 2 is removed leaving 0123. The prefix 200 is then inserted, resulting in a 7-digit number 200 0123.

```
Change udp 2                                                  Page   1 of   2
                              UNIFORM DIALING PLAN
                                Ext Codes: 2ddxx



                              Ext Code: 2xxxx Type:

dd   Type       dd   Type       dd   Type       dd   Type       dd   Type

0x: AARCode 200 1x:             2x:             3x:             4x:
00:             10:             20:             30:             40:
01:             11:             21:             31:             41:
02:             12:             22:             32:             42:
03:             13:             23:             33:             43:
04:             14:             24:             34:             44:
05:             15:             25:             35:             45:
06:             16:             26:             36:             46:
```

Figure 12: Configuring the Uniform Dialing Plan

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2. Change AAR Analysis to route 7-digit calls starting with 200 to the IP403 Office.

   At the terminal command prompt, enter **`change aar analysis 200`** and match the parameters shown in Figure 13. Then apply the changes.

   Note: This AAR entry created in Figure 13 tells ACP to use route-pattern 5 when it receives a 7-digit dial string beginning with 200xxxx.

```
change aar analysis 200

                          AAR DIGIT ANALYSIS REPORT

              Dialed            Total        Route    Call      Node
              String          Min    Max    Pattern   Type     Number

        2                      7      7      254      aar
        200                    7      7      5        aar
        3                      7      7      254      aar
        5                      7      7      254      aar
        6                      7      7      254      aar
        7                      7      7      254      aar
```

Figure 13: Configure AAR Analysis

3. Configure a route pattern.

   At the terminal command prompt, enter **`change route-pattern 5`** and match the parameters in Figure 14. Then apply the changes.

   Note: You may need to use a different route pattern depending on availability. In this step ACP removes the leading three digits (200) and re-inserts the digit 2. For example if the 5-digit number 21234 was dialed it would be processed as 200 1234 according to AARcode 200 in Figure 12. The route pattern specified forces ACP to strip the leading three digits (200) from the 7-digit dial-string then re-insert the digit 2. The result will be the original 5-digit extension 21234, which is then routed over trunk-group 5.

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```
change route-pattern 5                                          Page   1 of   1

   Grp. FRL NPA Pfx Hop Toll No.  Inserted                              DCS/ IXC
   No.          Mrk Lmt List Del  Digits                              QSIG
                            Dgts                                      Intw
 1: 5    0                   3   2                                     n   user
 2:                                                                    n   user
 3:                                                                    n   user
 4:                                                                    n   user
 5:                                                                    n   user
 6:                                                                    n   user

     BCC VALUE  TSC CA-TSC    ITC BCIE Service/Feature BAND  No. Numbering LAR
    0 1 2 3 4 W     Request                                 Dgts Format
```

Figure 14: Configure a Route Pattern

5. P580 Switch Configuration

The Cajun® P580 switch may be administered via a web interface or via the CLI (Command Line Interface). When administering via the CLI, the administrator must enter configure mode to create the necessary interfaces. In this example both interfaces were provisioned to send and receive RIP versions 1 and 2, as well as, support OSPF in backbone area 0.0.0.0. These parameters should be modified to fit your particular security concerns and routing scheme. Please refer to the "Avaya Cajun P580 User Guide" for additional information.

Important Note: The IP Office servers do not support RIP or OSPF routing protocols. It is meant to be an edge device at a remote location. In most deployments the IP Office server would use a statically assigned default route to the WAN only. Routing was only enabled to allow the P580 switch to interconnect with other switches and routers in a larger network.

```
Cajun# configure
Cajun(configure)# set vlan 112 name "IPOffice Array"  # create a VLAN
Cajun(configure)# set port vlan 2/1 112   # assign the VLAN to a mod 2 port 1
Cajun(configure)# interface "IPOffice Array"  # configure the interface
Cajun(config-if:IPOffice Array)# ip address 112.16.10.1 255.255.255.0
Cajun(config-if:IPOffice Array)# ip vlan 112  # link the port/vlan with the interface
Cajun(config-if:IPOffice Array)# ip routing-mode rt_mgmt
Cajun(config-if:IPOffice Array)# ip rip send version 1 2
Cajun(config-if:IPOffice Array)# ip rip receive version 1 2
Cajun(config-if:IPOffice Array)# exit
Cajun(configure)# set vlan 111 name "IP600 Array"  # create a VLAN
Cajun(configure)# set port vlan 2/2-4 111  # assign the VLAN to mod 2 ports 2 to 4
Cajun(configure)# interface "IP600 Array"  # configure the interface
Cajun(config-if:IP600 Array)# ip address 111.16.l0.1 255.255.255.0
Cajun(config-if:IP600 Array)# ip vlan 111  # link the ports and vlan with the interface
Cajun(config-if:IP600 Array)# ip routing-mode rt_mgmt
Cajun(config-if:IP600 Array)# ip rip send version 1 2
Cajun(config-if:IP600 Array)# ip rip receive version 1 2
Cajun(config-if:IP600 Array)# exit
Cajun(configure)# router ospf  # configure OSPF for network interconnection
```


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```
Cajun(configure router:ospf)# network 112.16.10.1 0.0.0.255 area
0.0.0.0
Cajun(configure router:ospf)# network 111.16.10.1 0.0.0.255 area
0.0.0.0
Cajun(configure router:ospf)# exit
Cajun(configure)# router rip # configure RIP for network interconnection
Cajun(configure router:rip)# network 112.16.10.1 0.0.0.255
Cajun(configure router:rip)# network 111.16.10.1 0.0.0.255
Cajun(configure router:rip)# exit
Cajun(configure)# exit
Cajun# copy running-config startup-config
Wrote running-config to '/nvram/startup.txt'
```

6. IP Office Server Configuration

The Avaya™ IP Office server is configured as a DHCP server out of the box. If you wish to statically provision the IP Office server and associated hardware you must first get the controller up and running in DHCP mode and then change the configuration to use static addressing.

Note: The steps below assume that physical connectivity, call routing and IP trunk provisioning have been completed on the IP600 Server and the Cajun® P580 switch.

1. Get the controller running in DHCP mode and then change it for static addressing.

   Connect a DHCP enabled PC equipped with Avaya™ IP Office Manager directly to the controller. Using the Manager software on the PC, modify the configuration to use a preferred IP address and IP mask and disable the DHCP server mode. See Figure 15. In this example the address 112.16.10.2/24 was used for the controller. Apply the changes.

   Note: Since DHCP is now disabled you can no longer access the unit using the DHCP enabled Manager PC. You must now change the Manager PC to use a static address within the same subnet as the controller (assuming direct attach). In this example the PC was changed to address 112.16.10.3 mask 255.255.255.0 with the default gateway 112.16.10.2.

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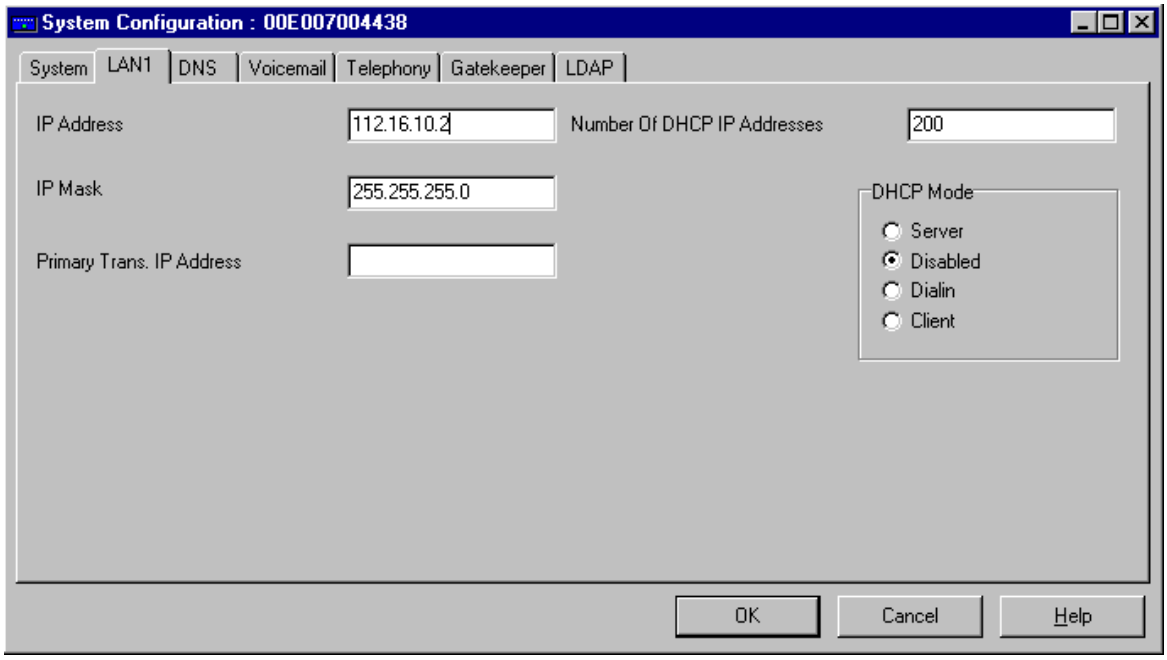

Figure 15: LAN1 Static Configuration

2. Configuring the default route.

Add a static route for use on LAN1 ports which points to the Cajun™ P580 switch interface address 112.16.10.1 as the default route. To administer the default uplink route click on IPRoute in the Navigation tree then right click on the white space to right side of the screen and select add. Match the parameter in Figure 16.

Note: The Avaya™ IP Office server is equipped with an onboard hub. To reduce your Ethernet collision zone you should always uplink the controller to a switch such as an Avaya™ P333R Stackable Routing Switch or other.

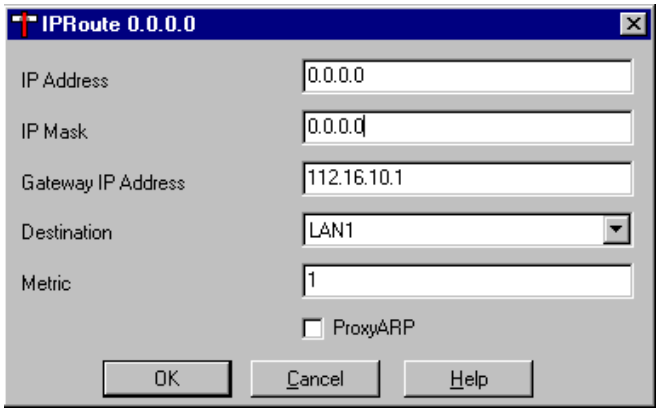

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Figure 16: Adding a Default Uplink Route

3. Check connectivity.

   From the Manager PC, ping the 111.16.10.1 interface to verify connectivity with the Avaya™ IP600 Internet Protocol Communication Server. See Figure 17.

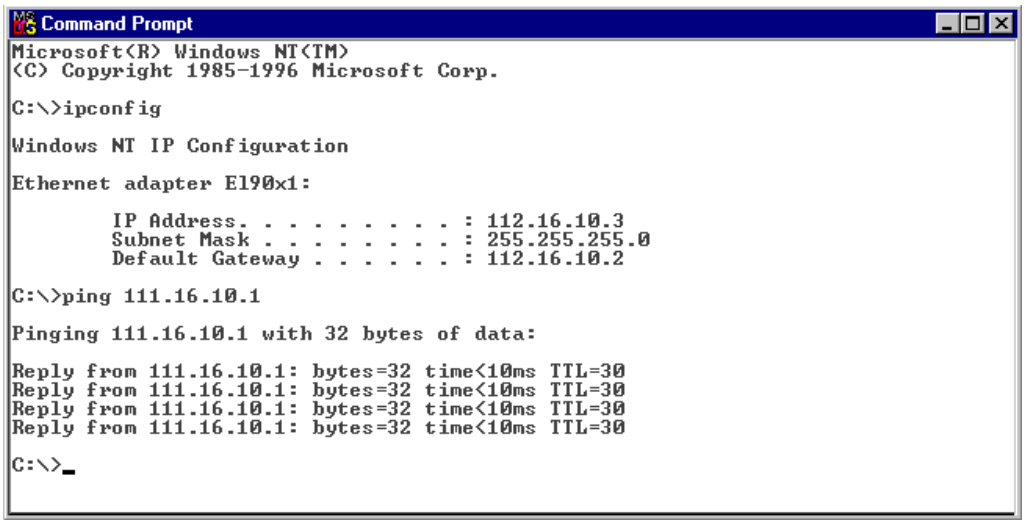
Command Prompt
Microsoft(R) Windows NT(TM)
(C) Copyright 1985-1996 Microsoft Corp.
C:\>ipconfig
Windows NT IP Configuration
Ethernet adapter E190x1:
IP Address. . . . . : 112.16.10.3
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 112.16.10.2
C:\>ping 111.16.10.1
Pinging 111.16.10.1 with 32 bytes of data:
Reply from 111.16.10.1: bytes=32 time<10ms TTL=30
Reply from 111.16.10.1: bytes=32 time<10ms TTL=30
Reply from 111.16.10.1: bytes=32 time<10ms TTL=30
Reply from 111.16.10.1: bytes=32 time<10ms TTL=30
C:\>

Figure 17: Ping Test

4. Add a new line configuration to create an IP trunk.

   Click Line in the Navigation tree and then right click the white space to the right of the screen and select new. The VPN Line must have a unique Line Number, Incoming Group ID and Outgoing Group ID. For this example 6 was chosen as the Line Number, Incoming Group ID and Outgoing Group ID. See Figure 18.

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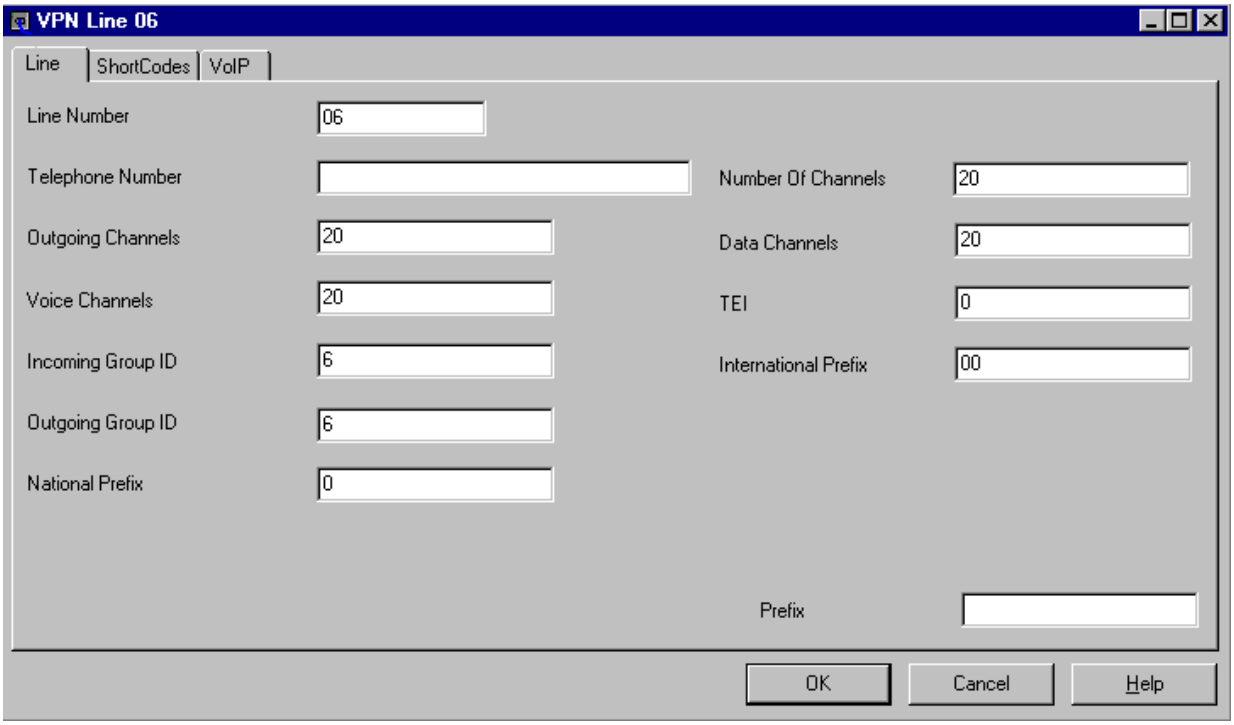

Figure 18: New VPN Line for H.323 IP Trunk

5. Modify the VoIP tab to enable trunking with the IP600 Server.

   Click on the VoIP tab under the VPN Line configuration window. See Figure 19. Change the Gateway IP Address to match the IP address of the IP600 Server C-LAN card. In this example 111.16.10.2 was used. The Faststart, Out of Band DTMF and Allow Direct Media Path radio buttons are checked and the Compression Mode drop-

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down menu is set to Automatic Selection by default and should be left this way for interoperability.

Note: Users may wish to use a specific Compression Mode in a particular configuration. Use the Compression Mode drop down menu to select a specific speech codec, but make sure that both sides support the selected value. When connecting to an IP600 Server it is best to use G.711 ALAW 64K, G711 ULAW 64K or G.729(a) 8K CS-ASCELP.

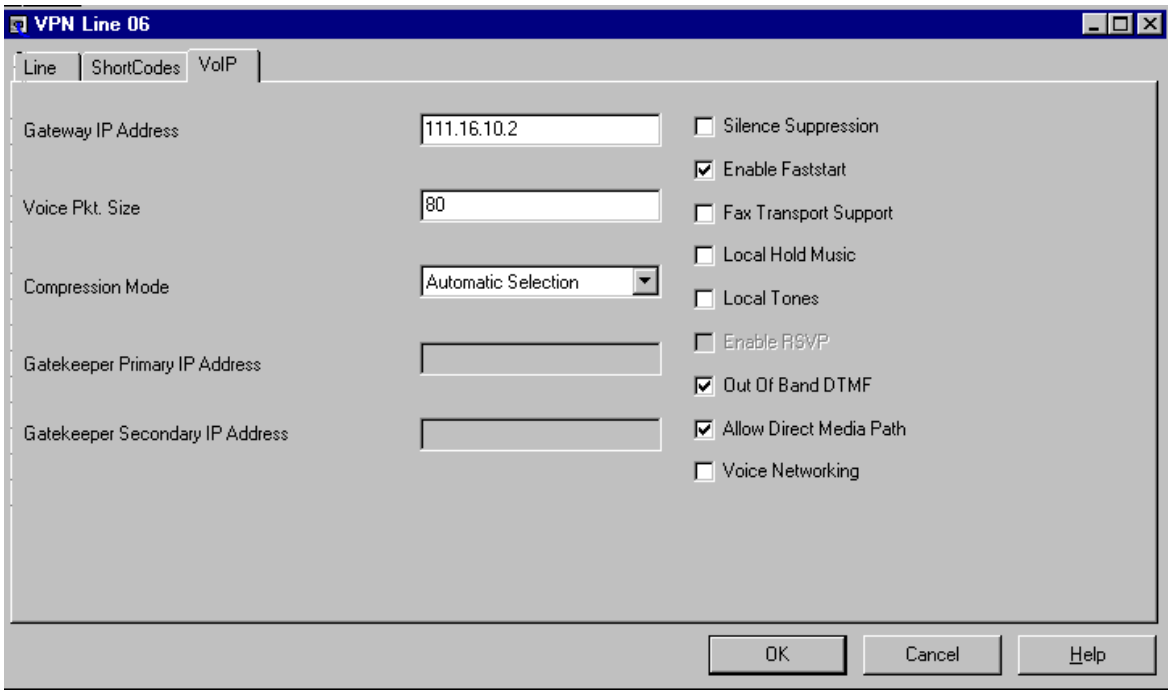

Figure 19: VoIP tab for H.323 IP trunk

6. Add a short code to route 5-digit extensions beginning with digit 3 to the IP600 Server.

   Click on the Short Code group in the Navigation tree, right click on the white space to the right and select new. Match the parameters in Figure 20, Short Code = 3xxxx, Telephone Number = 3NJ, Line Group ID = 6 and Feature = Dial then save the changes.

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Note: The 3xxxx indicates that the number must be 5-digits in length starting with 3 in order to use the route specified. The 3N indicates that the system should send the entire 5-digit dial string to the route specified, including the leading digit 3. The J bypasses the need to append a # after the dialed string. The Line Group ID = 6 indicates that IP Office call processing should route 3xxxx calls to the IP trunk for the IP600 Server. The Feature = Dial field indicates that upon receiving a dial string 3xxxx, the IP Office should out pulse the required number specified in the Telephone Number field over the trunk specified in the Line Group ID field.

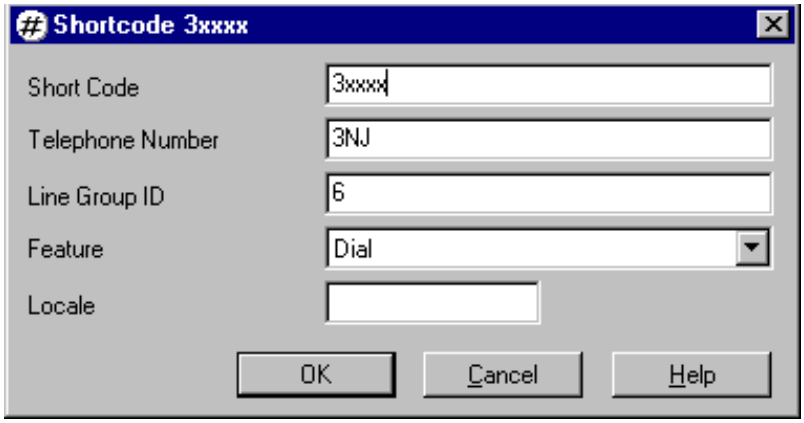

Figure 20: IP Office UDP Short Code

7. Install Avaya™ IP telephones using the static provisioning.

   Change the Hunt Group, Extensions and Users parameters to use 5-digit dialing on the IP Office server. Apply the changes then install all required IP telephones. Refer to page 3-2 of the "4600 Series IP Telephone Installation Guide" for static installation instructions.

   4606 telephone parameters for x20001:

```
Phone=112.16.10.4
CallSv=112.16.10.2
CallSvPort=1719
Router=112.16.10.2
Mask=255.255.255.0
FileSv=112.16.10.3
```

   4612 telephone parameters for x20002:

```
Phone=112.16.10.5
CallSv=112.16.10.2
CallSvPort=1719
Router=112.16.10.2
```


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```
Mask=255.255.255.0
FileSv=112.16.10.3
```

4624 telephone parameters for x20003:

```
Phone=112.16.10.6
CallSv=112.16.10.2
CallSvPort=1719
Router=112.16.10.2
Mask=255.255.255.0
FileSv=112.16.10.3
```

4624 telephone parameters for x30029:

```
Phone=111.16.10.4
CallSv=111.16.10.2
CallSvPort=1719
Router=111.16.10.1
Mask=255.255.255.0
FileSv=0.0.0.0
```

Important Note: IP telephones registering with the IP Office server must use the controller IP address for the CallSv (gatekeeper) IP address. The IP telephones (x20001, x20002 and x20003) registered with the IP Office server are running firmware version 1.1, which requires a TFTP server IP address in order to complete the boot up sequence.

Important Note: The IP telephone (x30029) registered with the IP600 Server is running firmware version 1.6 which does not require a TFTP server IP address in order to complete the boot up sequence.

7. Conclusion

These Application Notes provide administrators with the basic steps necessary to provision an H.323 IP trunk between an Avaya™ Call Processing (ACP) platform, such as an IP600 Server, or Avaya MultiVantage™ Software platform with an Avaya™ IP Office server. The steps provided should be helpful for implementing most deployments, but they do not address all possible configuration scenarios. There is no QSIG feature transparency between DEFINITY® Servers and Avaya™ IP Office for 1st GA release. Basic call setup information necessary for point-to-point calling is supported. Some components of the Q.931 standard (which are considered a subset of QSIG) such as Name Identification and Number transport via setup message Information Elements (IEs) have been implemented across H.323 IP trunks between the two systems.

8. Product Documentation References

- Administration for Network Connectivity, Issue 2.0, November 2000

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- 4600 Series IP Telephone Installation Guide, Issue 1.5, Comcode 700197858, June 2001
- IP Office Manager Application, Issue 4.0, November 2001

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